Graphing Linear Equations

In This Unit:

1. Slope-Intercept Form
2. Special Lines
3. Intercepts

No Bellwork
01/20/2012

Lesson 4.1
Slope-Intercept Form

What You Need to Know:

Slope-Intercept Form: $y=mx+b$, where m is slope and b is the y-intercept

Don't worry! You've already learned to write equations in slope-intercept form!! When you solve a formula for y, that's writing it in this form.

Always write an equation in slope-intercept form before you graph.

You always need the SLOPE and Y-INTERCEPT in order to graph.

Slope-Intercept Form

Write the equation in slope-intercept form. Then tell the slope and the y-intercept.

$y = mx + b$

-x+y=6

$+x \quad +x$

$y = 1x + 6$

$m = 1$

$b = 6$

-2x+y=-4

$+2x \quad +2x$

$y = 2x - 4$

$y = 2x + (-4)$

$m = 2$

$b = -4$

3x-y=1

$-3x \quad -3x$

$\frac{-y}{-1} = \frac{+3x}{+1} + \frac{1}{-1}$

$y = 3x - 1$

$y = 3x + (-1)$

$m = 3$

$b = -1$

4x+2y=1

$-4x \quad -4x$

$\frac{2y}{2} = \frac{-4x}{2} + \frac{1}{2}$

$y = -2x + \frac{1}{2}$

$m = -2$

$b = \frac{1}{2}$

-9x+3y=-6

$+9x \quad +9x$

$3y = 9x - 6$

$\frac{3y}{3} = \frac{9x}{3} + \frac{(-6)}{3}$

$\rightarrow y = 3x + (-2)$

$m = 3$

$b = -2$

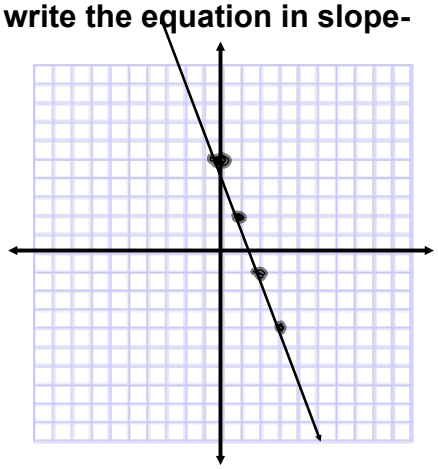
Slope-Intercept Form Cont.

Graph the equation. If necessary, write the equation in slope-intercept form first.

y=-3x+5

$m = \frac{-3}{1}$ $\frac{\text{rise}}{\text{run}}$

$b = 5$



x+4y=4

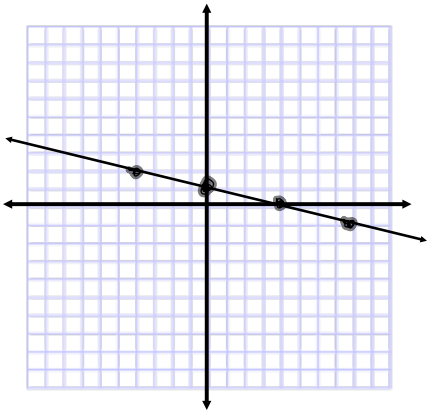
$-x \quad -x$

$\frac{4y}{4} = \frac{-1x}{4} + \frac{4}{4}$

$y = -\frac{1}{4}x + 1$

$m = -\frac{1}{4}$ $\frac{1}{-4}$

$b = 1$



x+3y-6=0

$-x \quad -x$

$3y - 6 = -x$

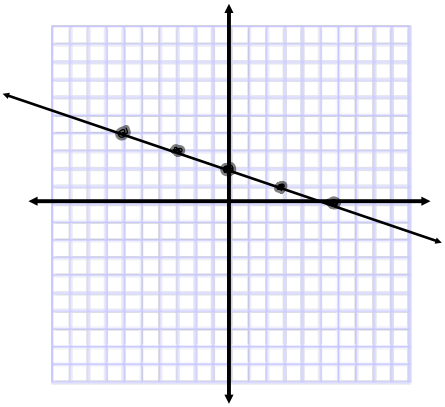
$+6 \quad +6$

$\frac{3y}{3} = \frac{-1x}{3} + \frac{6}{3}$

$y = -\frac{1}{3}x + 2$

$m = -\frac{1}{3}$

$b = 2$



Homework Assignment

Worksheet
"Graphing Slope-Intercept Form"

Bellwork
01/23/2012

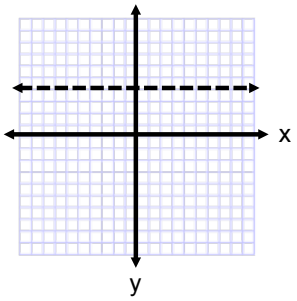
Lesson 4.2
Special Lines

What You Need to Know:

There are two types of special lines:
Horizontal Vertical

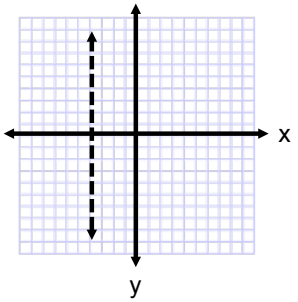
These lines are special because they don't appear to have any slope! They also have only ONE variable!

Think of it like this:
Which axis does a horizontal line cross?



So write a horizontal line as y=...
NOTE: horizontal lines have slope=0!

Which axis does a vertical line cross?

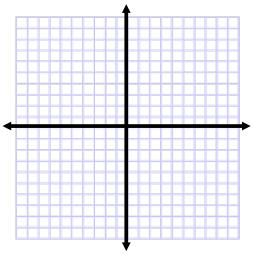


So write a vertical line as x=...
NOTE: vertical lines have slope=∅!

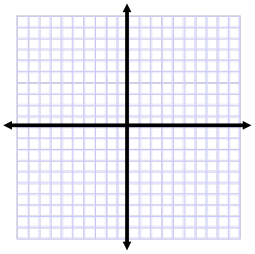
Special Lines

Tell whether the line is horizontal, vertical, or neither. Then graph the equation.

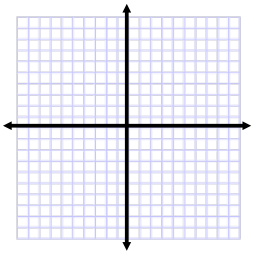
y=7



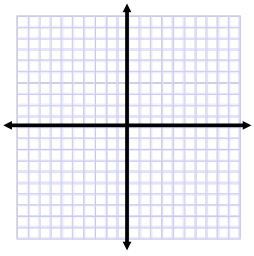
y=-5x



2x=8



$y=-\frac{1}{2}$



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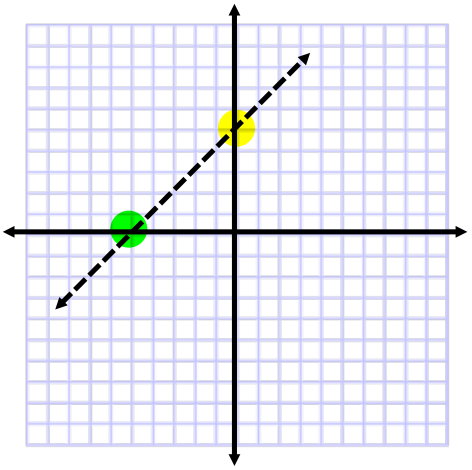
Lesson 4.3
Intercepts, Zeros, Solutions

What You Need to Know:

What are intercepts?

Points where the line crosses the x and y-axis!



Here's how to find them:

x-intercept	y-intercept
Plug 0 in for y!	Plug 0 in for x!
(,0)	(0,)

When using intercepts, you DON'T have to change the equation to slope-intercept form!

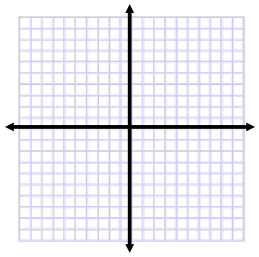
Now you know two ways of graphing:

1. Slope-Intercept Form
2. Using Intercepts

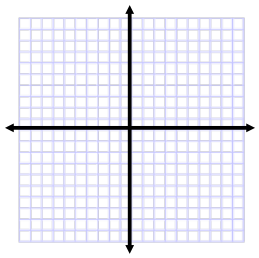
Intercepts, Zeros, Solutions

Find the intercepts [zeros] of the line. Then graph the equation.

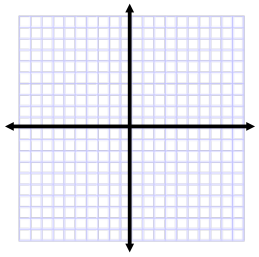
y=x+3



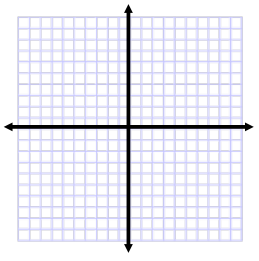
y=-2-x



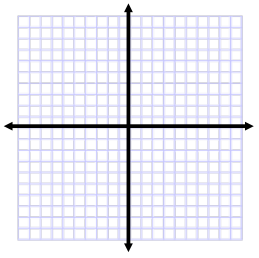
-2x-4y=20



7x-5y=35



3x=-y+5



Homework Assignment

Worksheet
"Special Lines and Intercepts"